

CLAIMS

1. A method for manufacturing an electrode sheet for capacitors, the method comprising the step of:

5 thermally spraying mixed powder in which intermetallic compound powder comprising of Al and valve action metal other than Al and Al powder are mixed, onto a surface of an aluminum foil to thereby form an alloy layer of Al-valve action metal other than Al on at least one surface of the aluminum foil.

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2. A method for manufacturing an electrode sheet for capacitors, the method comprising the steps of:

supplying Al powder and intermetallic compound powder comprising of Al and valve action metal other than Al from different

15 positions; and

thermally spraying both powders of the intermetallic compound and the Al onto a surface of an aluminum foil to thereby form an Al-valve action metal alloy layer on at least one surface of the aluminum foil.

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3. The method for manufacturing an electrode sheet for capacitors as recited in claim 1 or 2, wherein the thermal splaying is performed by plasma spraying.

25 4. A method for manufacturing an electrode sheet for capacitors, the method comprising the step of:

supplying Al powder and intermetallic compound powder comprising of Al and valve action metal other than Al from different positions into a single plasma flow; and

thermally spraying the plasma flow onto a surface of an aluminum foil to thereby form an alloy layer of Al-valve action metal other than Al on at least one surface of the aluminum foil.

5. The method for manufacturing an electrode sheet for capacitors as recited in claim 1, 2 or 4, further comprising the step of rolling the electrode sheet after forming an alloy layer of the Al-valve action metal other than Al.

6. The method for manufacturing an electrode sheet for capacitors as recited in claim 1, 2 or 4, further comprising the step of annealing the electrode sheet after forming an alloy layer of the Al-valve action metal other than Al.

7. The method for manufacturing an electrode sheet for capacitors as recited in claim 1, 2 or 4, wherein an average particle diameter of the intermetallic compound powder is 3 to 100 μm , and wherein an average particle diameter of the Al powder is 3 to 150 μm .

8. The method for manufacturing an electrode sheet for capacitors as recited in claim 1, 2 or 4, wherein a thermal spraying

mass ratio of the intermetallic compound powder and the Al powder (intermetallic compound powder/Al powder) is set so as to fall within the range of 0.1 to 5.

5 9. The method for manufacturing an electrode sheet for capacitors as recited in claim 1, 2 or 4, wherein powder of intermetallic compounds comprising of Al and one or more elements selected from the group consisting of Ti, Zr, Nb, Ta and Hf is used as the intermetallic compound powder.

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10. The method for manufacturing an electrode sheet for capacitors as recited in claim 1, 2 or 4, wherein Al₃Zr powder is used as the intermetallic compound powder.

15 11. The method for manufacturing an electrode sheet for capacitors as recited in claim 1, 2 or 4, wherein an alloy foil comprising of Al and valve action metal comprising one or more elements selected from the group consisting of Ti, Zr, Nb, Ta and Hf is used as the aluminum foil.

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12. A capacitor electrode sheet manufactured by the method as recited in claims 1, 2 or 4, wherein a fine structure of the Al-valve action metal alloy layer comprises an intermetallic compound phase and an Al simple substance phase, and wherein an
25 interval of adjacent secondary branches in a dendrite (dendrite crystal) of the intermetallic compound phase is 5 μ m or less.

13. A capacitor electrode sheet in which an aluminum alloy coating layer is integrally formed on at least one surface of a core material made of aluminum foil,

5 wherein a fine structure of the coating layer comprises an intermetallic compound phase and an Al simple substance phase.

14. The capacitor electrode sheet as recited in claim 13, wherein an interval of adjacent secondary branches in a dendrite
10 (dendrite crystal) of the intermetallic compound phase is 5 μm or less.

15. The capacitor electrode sheet as recited in claim 13 or 14, wherein a thickness of the core material is 5 to 200 μm , and
15 wherein the thickness of the coating layer is 5 to 150 μm .

16. A method for manufacturing an anode material for electrolytic capacitors, the method comprising the steps of:

20 etching the electrode sheet manufactured by the method as recited in claim 1, 2 or 4; and then

subjecting the etched electrode sheet to an anodizing treatment to form a dielectric skin on the surface of the electrode sheet.

25 17. An anode material for electrolytic capacitors manufactured by the method as recited in claim 16.

18. An electrolytic capacitor constituted by using the anode material as recited in claim 17.

5 19. A method for manufacturing an anode material for electrolytic capacitors, the method comprising the steps of:
etching the electrode sheet as recited in claim 12; and then
subjecting the etched electrode sheet to an anodizing
treatment to form a dielectric skin on the surface of the electrode
10 sheet.

20. An anode material for electrolytic capacitors manufactured by the method as recited in claim 19.

15 21. An electrolytic capacitor constituted by using the anode material as recited in claim 20.

22. A method for manufacturing an anode material for electrolytic capacitors, the method comprising the steps of:
20 etching the electrode sheet as recited in claim 13 or 14; and
then
subjecting the etched electrode sheet to an anodizing
treatment to form a dielectric skin on the surface of the electrode
sheet.

25 23. An anode material for electrolytic capacitors

manufactured by the method as recited in claim 22.

24. An electrolytic capacitor constituted by using the anode material as recited in claim 23.